

## **MotorWeek Transcripts**

### **AW 'Hydrogen Fuels Now'**

**John Davis:** For years we've been talking about the prospect of using hydrogen to fuel our vehicles. But while it seems that the promise of hydrogen is always just five years away, hydrogen powered vehicles are actually on the road right now and other sectors are ramping up to use this clean fuel as well. So, we thought it was time to take a snapshot of the hydrogen landscape to see what's here now and what is over the horizon.

Hydrogen is the simplest element and most plentiful gas in the universe, but is usually found in combination with other elements, like in water. Separating it can be costly, but it's clean-burning and can be produced from a number of readily-available domestic resources, including natural gas, ethanol, biomass and water, all of which makes Hydrogen a very attractive alternative to gasoline.

Hydrogen Fuel Cells are the most promising technology for making power from Hydrogen. Several carmakers have demonstrated viable Fuel Cell Electric Vehicles, and both GM and Honda are putting consumers behind the wheel in trial fleets right now.

General Motors is confident enough in their fuel cell-electric Equinox that they have placed 100 of them in service in New York, LA and Washington, DC to see how they perform as daily drivers. This 2 ½ year long program, called Project Driveway, places prototype vehicles in the hands of regular drivers.

Honda has begun leasing its FCX Clarity fuel cell vehicle to consumers in California. As customer demand and the Hydrogen refueling infrastructure expands, Honda is prepared to expand that availability to other markets.

**Steve Ellis:** Hydrogen fuel cell vehicles offer a great opportunity to take the vehicle out of the environmental equation...zero carbo, zero smog, zero dependence on oil. So we're on a pathway, it would be unfair to say the technology is here today, ready to deploy, but then again right behind me is a car we are putting in the hands of customers.

**Patrick Serfass:** Right now we have almost 300 vehicles in the U.S. We also have 70 operational stations in the North America. But we need these numbers to grow and specifically...grow together.

**Chris Daetwyler:** It's the chicken and egg problem, where you have no infrastructure and no end users because both are waiting for the other to exist.

**John Davis:** Aside from fuel cost, the lack of a refueling infrastructure is perhaps the biggest hurdle to widespread use of Hydrogen as a fuel. For one thing, developers are finding the station permitting process is being bogged down by a lack of knowledge. Many local officials have never dealt with hydrogen refueling before, so familiarizing them is key. And new stations, like this one in Columbia, South Carolina, are being built now with an eye towards future expansion. Another great platform for the use of Hydrogen fuel is with buses. Their size makes packaging of bulky components relatively easy.

**Bus Driver:** “This bus was built in Golden, Colorado. It’s going to be here in Columbia, South Carolina for a year...for some testing, and then it’s going to be open for passengers to ride on sometime between August and September. This is all-electric. It’s got batteries underneath you, right underneath the floor. It’s got two fuel cells in the back, which recharges the batteries. On the roof, much like a compressed natural gas bus, you have Hydrogen tanks that feed the fuel cells.”

**John Davis:** Hydrogen fuel cells make sense in a number of off-road and stationary applications as well, and not surprisingly, the U.S. military is leading the way in their development. Near Harrisburg, Pennsylvania, a test fleet of hydrogen fuel cell powered forklifts runs alongside their standard battery-electric counterparts at the Defense Logistics Agency’s massive Eastern Distribution Center.

**Bob Skinell:** In this facility, we have approximately 220 pieces of material handling equipment, forklifts. Of that, 40 of them are hydrogen powered. Inside the building, we have 2 dispensers. There’s a very limited amount of hydrogen in the building at any given time. Most of the piping is run exterior to the building right up until the dispensers. Our fire department was heavily involved in this. They went with us to different facilities to see and learn...to make sure that we had a safe installation that was a prototype for the rest of the department of defense. So far, it appears that these are key, and they really like the fuel cells. It’s pretty invisible to the operator and if the business case works out, I expect this to expand

**John Davis:** At the University of Maryland’s Ballard Fuel Cell Lab, researchers are developing a fuel cell electric portable field generator that will derive its hydrogen from standard military diesel fuel.

**Gregg Jackson:** “We’re working here on an industrial-government-academic collaboration to develop proton-exchange membrane fuel cells for various applications. Our principal research area here is to develop the technology and systems that are needed to enable these types of fuel cells to operate not only on Hydrogen, but on liquid fuels as well. And this opens up applications in portable generators, auxiliary power units for large trucks and also for recreation vehicles.”

**John Davis:** To those who say Hydrogen-fueled vehicles are “not ready for prime-time”, we say, “look again”. While work continues in the areas of catalyst materials, cost-effective hydrogen production, and infrastructure development, the technology of fuel cells is rapidly advancing and the reality of a hydrogen highway is getting closer to our own driveways every day.